SAVANTS · EPISODE 28

Savants in the Animal Kingdom: The Skills We Envy

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Hello again! What a joy to meet in this 28th episode of our series on Savant Syndrome. So far, we have spent a lot of time analyzing the human brain, marveling at people who can remember every page of a book or draw an entire city after a single glance. But today, we are going to take a fascinating turn. We are going to step out of the clinics and human laboratories to look toward the forest, the sky, and the ocean. Do 'savants' exist in the animal kingdom?

To understand this, let's imagine for a second that the brain is like a toolbox. Most of us have a box with a hammer, a screwdriver, and a pair of pliers; useful tools for many general tasks, but we are not experts in any. However, a human savant has a box that perhaps lacks a hammer but possesses a surgical precision laser capable of cutting diamonds. In the animal kingdom, we find entire species that are born with that 'laser' as standard equipment.

- Consider the Clark's Nutcracker, a small bird that hides up to 30,000 seeds in thousands of different locations across hundreds of square miles. Months later, under the snow, it is able to remember with mathematical precision exactly where each one is. If a human did that, we would call them a genius of spatial memory.

- Think of the chimpanzee Ayumu, who can memorize the position of numbers on a screen in a fraction of a second, far surpassing any college student with a photographic memory.

- Or look at desert ants, which walk in random circles looking for food and, as soon as they find it, return to their anthill in a perfect straight line, as if they had a military GPS integrated into their antennae.

What we call an 'island of genius' or a savant skill in a human is simply their way of surviving in these animals. But why can they do these things naturally while we need a 'different' brain to approach their level? Is it possible that animals see the world in the same way a human savant does? Get ready, because the answer forces us to rethink what it really means to be 'intelligent.'

Extreme Specialization: Superpower or Survival?

To delve deeper into this topic, we must understand the difference between 'general intelligence' and 'specialized intelligence.' Humans are, by nature, generalists. Our brain is like a modern smartphone: it can take photos, browse the internet, send messages, and play video games. It's not the best camera in the world or the most powerful game console, but it does everything decently. In contrast, many animal skills are like a tool designed for a single purpose but brought to absolute perfection. This is what scientists call 'cognitive modules.'

In previous episodes, we saw that human savants often have privileged access to raw data that the rest of us filter out. For example, when you look at a forest, your brain tells you 'it's a forest.' The brain of an artistic savant might see '4,528 leaves, 12 shades of green, 4 bark patterns, and a specific shadow.' Animals seem to operate much closer to this level of raw detail. They don't need to 'interpret' the world as much as we do; they simply react to data that is invisible to us.

The Case of Ayumu and Working Memory

One of the most shocking examples is that of the chimpanzee Ayumu, who lives at Kyoto University. In a memory test, numbers 1 through 9 appear on a screen in random locations. After only 60 milliseconds (less than the blink of an eye), the numbers disappear and are replaced by white squares. Ayumu is able to touch them in the correct order, from 1 to 9, almost always without failing. Humans, even after months of practice, can barely reach number 4 or 5 in that ridiculously short amount of time.

Why is Ayumu better than us? There is a theory called the 'Cognitive Tradeoff Hypothesis.' It suggests that, in the course of our evolution, humans sacrificed that immediate and ultra-fast visual memory in exchange for more abstract faculties, such as language. For Ayumu, seeing the pattern of the numbers is like seeing an instant photograph; he doesn't need to 'think' about the numbers, he simply 'sees' them imprinted on his mind. This is exactly how many human savants describe their photographic abilities.

Mental Maps and the Biological GPS

Let's talk about the Clark's Nutcracker (Nucifraga columbiana). This bird is not a genius by choice, but by necessity. In the fall, it must store pine nuts to survive the winter. Imagine hiding 30,000 euro coins in a 20-square-kilometer park and having to find them all three months later under half a meter of snow. This bird's hippocampus—the part of the brain responsible for spatial memory—is proportionally much larger than ours. In fact, its hippocampus physically grows during the seed storage season.

This phenomenon of 'growth by use' is similar to what we see in some savants or people with hypercalculia. Their brains dedicate massive resources to a single function. The bird doesn't know what Pythagoras' theorem is, but its brain performs complex trigonometric calculations every time it flies to a hidden seed based on the position of three trees or a rock. It is a form of applied mathematical genius that it is not even conscious of.

The Filter of Consciousness

This is where the science gets really interesting. Dr. Allan Snyder, an expert we've mentioned before, suggests that human savants can access 'low-level' information because their brains lack the inhibitory filters the rest of us have. Typical humans are programmed to see the general concept (the 'Gestalt'), while savants see the individual parts.

Many animals seem to lack these conceptual filters. A bee doesn't see a 'beautiful flower'; it sees a specific pattern of ultraviolet light that tells it where the nectar is and calculates the sun's angle to tell its companions the exact route. This raw data processing is what allows migratory birds to 'see' the Earth's magnetic field. For us, the magnetic field is an abstract concept that we measure with compasses; for a homing pigeon, it is probably a visual or tactile sensation as real as the wind on its wings.

Are Animals 'Savants by Default'?

We could say that nature has created 'savant packages' for each species as needed. The dog has an 'olfactory savantism' that allows it to smell the past (who was there before) and the future (an approaching storm). The bat has an 'auditory savantism' that allows it to build a 3D image of the world through echoes.

The big difference is that in humans, savant syndrome usually appears as compensation for damage or a neurodivergent configuration (like autism). In the animal kingdom, these skills are not compensation but the norm. However, the underlying mechanism—the massive dedication of neural circuits to a single raw data processing task—is strikingly similar.

Final Reflection

We often make the mistake of thinking we are at the top of the cognitive pyramid. But when we study animals through the lens of savant syndrome, we realize that it is we who are 'limited' in many ways. Our general intelligence has allowed us to build cities and technology, but in doing so, we have lost the connection to the raw data of reality. We have traded the ability to see every leaf for the ability to understand the concept of a forest.

Watching a bird remember 30,000 seeds or a chimpanzee remember numbers in milliseconds teaches us humility. It reminds us that genius is not always an academic degree; sometimes it is simply the result of a brain that has not placed filters between itself and the world. In the next episode, we will explore how we can use technology to try to 'turn off' our filters and awaken, if only for a few minutes, the animal genius we all carry inside. Are you ready to try to see the world without filters?